

THE MODERN WHEEL

ITS DEVELOPMENT FROM THE RUDE LOGROLLER OF AGES AGO.

The Solid Circular Slab of Wood and the Nail Studded, Perforated Slab That Led Up to Spokes, Tires and Ball Bearings.

All the world is upon wheels nowadays, and it is extremely difficult to realize that one time there were no such aids to motion. How long ago it must have been there is no possibility of determining. The origin of the wheel is quite lost in the obscurity of the past. But, though we cannot trace the wheel to its actual inception, there is to be found in the rude sculptures and pictures of the past enough in the way of hint and suggestion to show how it probably originated. It is reasonable to suppose that the sledge would have preceded the wheeled vehicle. To drag along a thing by main force is what many of the lower animals are accustomed to do, and, of course, human beings must have done it from the infancy of the race.

The first step in the evolution of express trains and motor cars would naturally have been an attempt to facilitate the movement of whatever was being hauled along by smoothing the under surface where practicable and leveling the road. Where the under surface of the burden could not be smoothed the obvious alternative would have been to get it on the top of something which did permit of the smoothing something in the form of a sledge, that is to say. It is certain that this primitive vehicle was known to the early Egyptians.

In Wilkinson's "Ancient Egypt" there is the reproduction of a picture found in a grotto behind E'Dayr, a Christian village between Antioch and El Bersheh, representing the removal of a colossal statue. It is mounted on a sledge with runners underneath, and it is being hauled along by 172 men pulling at ropes, while in front of the sledge a man is pouring down some sort of fluid, probably grease, says the learned author, and he adds that, although it is not shown in the picture, the roadway would most likely be laid with planks.

That, in all probability, is the rudimentary idea of a modern railway truck traveling over an iron rail. There is the loaded vehicle, and there is the specially prepared road. The gradual evolution of the modern conveyance and its facility of motion would be only a question of time and of mother wit slowly effecting small improvements. That picture itself is supposed to date nearly 2,000 years before the Christian era, and how much farther back the work itself would go it is impossible to say.

It is easy to conceive that pure accident may have suggested rollers underneath the sledge as a means of rendering its movements easier. But whether accident or invention may have done it the use of rollers in this connection was clearly the next move. This is shown in the famous Assyrian sculpture of the moving of the winged bull. There we find the sledge and two rollers beneath it, and it is difficult to suppose that the wheeled vehicle was known at that time, or it surely would have been employed instead of the more primitive sledge. The sledge and the rollers having been arrived at, we have no positive information as to how the next stage was reached, but it is not difficult to conceive what might quite feasibly have happened. A simple modification of the roller might very well have afforded the germ of the modern wheel and axle. If we imagine the two rollers somewhat reduced in size in the middle, so as to drop the sledge down a little and prevent its running off the roller ends, we get the incipient wheel and axle at once, and some sort of a plug in the bottom of the sledge below and behind each axle would prevent its running from under the vehicle, and there would be the incipient wheeled cart. In Portugal there is said to be in use a farm cart in which just such plugs as these are actually found beneath the body of the vehicle, which may thus be lifted off its wheels. What would probably be the next stage of the process of development can be traced in the available records of the past. Instead of a roller being merely reduced in the middle, with its unreduced ends forming solid wheels, we find a very early pictorial representation of a vehicle in which broad slices have been cut off from the round bole of a tree and connected under the sledge by a bar through their centers.

There are the wheels, for the first time in pictorial record, separate from the axle. For the first time the actual wheel appears, but the square end of the axle plunged into its center shows that wheel and axle went round together, and the next stage, no doubt, would be to fix the axle and let the wheels run loosely round its reduced ends, the wheels being kept in their places by something in the nature of linchpins. That would be a distinct stage in the line of progress, though it is curious to observe that in our railway carriages and motor cars we have got back to what no doubt was the earlier form, the wheel and axle revolving together in bearings.

The earliest wheel of which we have any representation is just a solid circular log of wood, such as might be sliced off the end of a tree trunk, and that there can be no doubt, must have been the earliest form of the thing. It is again curious to notice that in some of our very finest railway trains we have got back to that most primitive of all forms, the solid wheel. But these circular slabs of wood, as they got dry, would be very likely to crack and split under rough usage, and both in Greece and Portugal we find in ac-

tual use "farm" vehicles with wheels made up of several pieces of wood nailed together. This would be a durable form of the same thing—the solid wooden wheel—and in Buller's "Winter in the Azores" there is an illustration that may be considered to give the rudimentary idea of the tire. This is a wheel of solid wood, studded closely all round its outer edge with large iron nails. As the use of wheeled vehicles became more general they would tend to increase in size and solidity and the wheels on which they ran become heavier. To lighten them and perhaps for ornament it came to be the practice to perforate them with holes symmetrically arranged, and it is pretty safe to assume that the development of this idea would gradually lead to the spoked wheel with a central hub.

Of course all this was in a very remote past, for as far as history goes back wheelwrights knew how to build war chariots and other vehicles with spoked wheels and metal tires very skillfully and ornamentally made. Thus, although we cannot always trace the thing step by step, there cannot be much doubt that something like the line we have indicated must have been followed in the development of the modern carriage wheel from those rollers underneath the winged bull, which may date perhaps from a period 1,000 years before the Christian era. The spoked, iron bound wheel having emerged from the obscurity of the past, no further advance was made until within living memory.

With the introduction of the private "coach" the wheelwright's trade became a very important industry, but the chief desideratum was not any new form, but solidity and durability. For generations after the introduction of the "coach" English roads were execrable, and wheels that would stand any amount of rough traveling were the great aim of the wheelwright. For very many years nobody seemed to think of adapting roads to wheels, but only of building wheels that would stand the roads. Then came the cogged wheels of the first tram line and then the flanged wheels of the modern railway.

But no radical change was effected in the ordinary road wheel until some time after the introduction of the bicycle. The first of the old bone shakers had good, strong, iron bound wheels, warranted to respond to every little bump and hollow in the road most conscientiously. These soon gave way to the solid india rubber tire, which had its little day and was a very decided improvement upon everything that had gone before it. Solid india rubber, however, could prove no match for a tire of compressed air, and in the achievement of the pneumatic periphery with ball bearings it looks at present as though the long course of wheel development that began in the dim and dreamy past may surely have come to an end.—London Standard.

Fighting Instinct in Birds.
In the defense of their young even birds become fearless and sacrifice their lives with a promptness which, as a sort of suicidal instinct, might seem rather paradoxical if it were not for that hyacinth of nature which always sacrifices the interest of individuals to the interest of the species. A partridge hen with a covey of half grown chickens never hesitates to fling herself into the path of the pursuing dog in order to give her youngsters a chance to escape in the thicket, and the Mexican weaver thrush flies even at the head of a snake seen to approach her nest with predatory purposes. Too often that devotion is rewarded with death, but the serpent accepts the vicarious sacrifice, and the orphaned nestlings are almost sure to be reared by other birds.

The Turkish Night Watchman.
According to a recent writer the watchman in a Turkish city has a very medieval time of it. "At night, lantern in hand, he explores the black chasms of the streets. Packs of dogs hang around him baying like wolves. Their teeth flash and snap, for they do not perceive the atmosphere of the faithful. Should the wind put out his spark of light they would surely devour him. The watchman challenges and holds his rifle ready. Mysterious houses with barricaded doors hang their stories over his head. As he marvels at their beauty one leg plunges knee deep into a mudhole in the middle of the street. A shower of slops descends upon him from those melodramatic windows and he breathes the very spirit of medievalism and the Arabian Nights."

The Turkish Women Were Surprised.
Here is an amusing anecdote told by Lady Mary Wortley Montagu of her residence in Constantinople: "One of the highest entertainments in Turkey is having you to their baths. When I was introduced to one, the lady of the house came to undress me, another high compliment they pay to strangers. After she slipped off my gown and saw my stays she was very much struck at the sight of them and cried out to the other ladies in the bath: 'Come hither and see how cruelly the poor English ladies are used by their husbands. You well know indeed of the superior liberties allowed you when they look you up thus in a box!'"

Why an Apple Decays.
The surrounding conditions favor or retard the growth of decay fungi. If the temperature is near freezing they are comparatively inactive, but when the room is warm and moist fruit cannot be expected to keep well. Cold storage naturally checks the decay. The ideal apple has no fungous decayments and no bruises. If it could be placed in a dry, cool room free from fungous germs it ought to keep indefinitely until chemical change ruins it as an article of food.

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Butcher-line Embroidered Nets, and value 39c each, at..... 25c</p> <p>Dinner Sets—American Porcelain, 100 pieces, plain white and gold edge, large platter and soup tureen; price, special at..... 14.98</p> <p>Governor Refrigerators—The best hardwood, zinc-lined, cleanable Refrigerator, the only removable ice chamber having a positive dry air circulation, up from..... 10.50</p> <p>Carriages—No. 21 is Our Special Runabout with Richard's long-distance axle, Brewster pattern drop, forged fifth wheel, open rubber head springs, complete with wing shields..... 85.00</p> <p>Harness—Horsemen tell us, and they know, that the Special Harness is the best they ever saw for the money, which is..... 25.00</p> <p>Hammocks—Woven Hammocks of many colors and kinds, with pillows and valance, all full sizes, from 98c up to..... 10.00</p> <p>Bazar Oil Stoves—Two three-inch wicks, special price..... 60c</p> <p>Lawn Mowers—The Dewey, made by the Philadelphia Lawn Mower Co., 4 blades on its revolving cutter. It does fine work and superior to many of the so-called first-class mowers. Your choice of four sizes—12, 14, 16, 18 inch, price..... 3.49</p> <p>Boys' 5.00 Suits for 3.98—The fabrics are serge, ochevito and camel-hair, the suits are exceptionally well tailored, durable lined and fashioned after the latest spring models. The Norfolk are made with plaids over the shoulders; double-breasted suits have new long lapels and have lots of snap to them; sizes 3 to 16 years..... 3.98</p> <p>Galloons—Venee and Irish crochet galloons and straight insertings, 2 to 7 inch wide, value 1.50 to 1.98 yard, special for..... 98c</p>	<p>Sole Leather Suit Cases—Steel frame, lined with Irish linen, head-strap, straps top and body of case, cases have French corners and riveted by hand.</p> <table border="1"> <tr> <th>Size</th> <th>12-in.</th> <th>14-in.</th> <th>16-in.</th> <th>18-in.</th> </tr> <tr> <td></td> <td>3.00</td> <td>3.50</td> <td>4.00</td> <td>4.50</td> </tr> <tr> <th>Size</th> <th>22-in.</th> <th>24-in.</th> <th>26-in.</th> </tr> <tr> <td></td> <td>7.00</td> <td>7.50</td> <td>8.00</td> </tr> </table> <p>Heavy Duck Covered Trunks—bound with sheet iron, with one hoop front and back, Victor lock, four straps on top and two straps entirely around body. Well clamped leather handles and strong hinges, iron bottom, paper lined, fitted with one tray with hat box.</p> <table border="1"> <tr> <th>Size</th> <th>28-in.</th> <th>30-in.</th> <th>32-in.</th> </tr> <tr> <td></td> <td>3.00</td> <td>3.25</td> <td>3.50</td> </tr> <tr> <th>Size</th> <th>34-in.</th> <th>36-in.</th> </tr> <tr> <td></td> <td>3.75</td> <td>4.00</td> </tr> </table> <p>Free Portraits—If you buy of us \$10 worth of goods, we will make for you, free of cost, a beautiful medallion portrait from your photo. Frames are extra, but no one is obliged to buy a frame.</p> <p>Baby Carriages and Carts—We have the largest collection of Children's Vehicles in the State. We show 125 styles of the best makes of the country in the F. A. Whitney, Dann and "Blood" carriages and carts. Our prices begin at 2.95 and run up 37.50 to.....</p> <p>Fancy Taffetas and Louises—In checks, stripes and neat effects, all this season's styles and color; for the correct spring waist slits, for spring and summer wear, at..... 75c</p> <p>Embroidered Natural Pongee—Colored dots, rings and stripes, very desirable for suits or waists. All our dollar quality for Monday sale..... 89c</p> <p>Wash Silks—Colored effects in solid colors of navy, brown, champagne, steel, black and white, also two-toned stripes, all this season's styles and colorings, at a yard..... 38c</p>	Size	12-in.	14-in.	16-in.	18-in.		3.00	3.50	4.00	4.50	Size	22-in.	24-in.	26-in.		7.00	7.50	8.00	Size	28-in.	30-in.	32-in.		3.00	3.25	3.50	Size	34-in.	36-in.		3.75	4.00	<p>Chiffons—The newest 42-inch chiffon, in all the desirable shades, value 59c per yard, for..... 39c</p> <p>Ladies' Shawls—Ladies' pure silk imported French shawls, made with elegant silk fringe borders, Parisian designs. The same shawls are selling in the New York exclusive stores at double these prices: 8.75, 9.50, 10.45 and..... 10.45</p> <p>Gowns—Made of muslin and cambric, V, high, low and chemise effects, long and short sleeves lace and embroidery trimmed, all sizes, special price..... 75c</p> <p>Drawers—Made of muslin and fine cambric, trimmed with pretty embroidery, ruff, ruff and lace, other styles with plain hemstitched ruff, both styles, all sizes, extra good value..... 49c</p> <p>Skirts—In the ombre styles with double ruff of hemstitched tucks, others nicely trimmed with pretty embroidery, extra dust ruff, all sizes, special..... 1.49</p> <p>Japanese Mattings at 7.25, 9.00, 10.00 and 12.00 for roll of 40 yards, or per yard, 19c, 25c, 30c, and..... 35c</p> <p>Chinese Mattings at 7.50, 9.00, 10.50, 12.00 and 13.00 for roll of 40 yards, or per yard 20c, 25c, 30c, and..... 35c</p> <p>Unmade Robes—Ladies' White Linen Robes, embroidered and lace trimmed, full skirt, material for bodice and sleeves, value \$17 to..... 8.95</p> <p>Women's Black Silk Belts—with oxidized buckles front and back, also crub leather, in black, white, tan, red, gray, brown, val. 39c, special..... 25c</p> <p>Women's Plaited Belt—Trimmed with buttons and ruff; Crubbed Silk Belts in black, white, red, green, blue, tan and brown; Crub Leather in black, white, tan, brown, red, blue and green, value 75c, for..... 50c</p> <p>Popular 4.75 Hats—A Million (marvel) verities sensations in the trade are our 4.75 Trimmed Hats for Women and Misses. 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HAHNE & CO., Newark, N. J.

(Chancery A-301.)
SHERIFF'S SALE—In Chancery of New Jersey. Between The Knights of Pythias Building and Loan Association of Newark, N. J., complainant, and Fannie E. Ashley et al., defendants. Pl. fa. for sale of mortgaged premises.

By virtue of the above stated writ of fieri facias, to me directed, I shall expose for sale by public vendue, at the Court House in Newark, on Tuesday, the fourteenth day of June next, at two o'clock P. M., all those tracts or parcels of land and premises situate, lying and being in the town of Bloomfield, Essex County, New Jersey:

First Tract—Beginning at a point in the east line of the street known as Railroad avenue (now Glenwood) and fifty feet south from the line of lands belonging to Balhazar Kintz; thence south forty-two and a half degrees east five chains and forty-five links to the pond and at the most southwesterly point of Judian Hill; thence south along the borders of the pond at ordinary high water eighty-one and a half degrees east two chains; thence north fifty-eight degrees fifty-five minutes east one chain and thirty-seven links; thence north fourteen degrees and twenty-five minutes east three chains and thirty links; thence still along the borders of the pond north forty-eight and a half degrees east one chain and sixty links; thence north sixty-five degrees and forty minutes west two chains and thirty-three links to lands of Balhazar Kintz; thence along his line south thirty-seven and a quarter degrees west three chains and forty-five links; thence north two and three-quarter degrees west two chains and forty-five links to the east line of Railroad avenue; thence southerly along said line to the place of beginning.

Also the lands lying on front of said tract to the centre of said Railroad avenue, subject to the said street.

Second Tract—Beginning at a point in the easterly line of the road leading from the Bloomfield Railroad depot to Orange (now Glenwood avenue), which point is the south-west corner of a tract of land conveyed by said Isaac D. Dodd to said Tryphena Ashley by deed dated May 29, 1866; and thence running (1) along said easterly side of said road in a southerly direction fifty feet; thence (2) in an easterly direction parallel with the westerly side of said tract so as above conveyed by said Isaac D. Dodd to said Tryphena Ashley to the pond; thence (3) along the borders of the pond at ordinary high water mark in a northerly direction to the southerly line of the said lot conveyed as above to said Tryphena Ashley; thence (4) along said southerly line in a westerly direction to the place of beginning, being a strip of land fifty feet in width adjoining the first lot or tract herein.

Being the same two tracts of land conveyed to said Isaac D. Ashley by Tryphena Ashley (widow) by deed dated April 1, 1901, and to be recorded with this mortgage.

Newark, N. J., May 9, 1904.
WILLIAM C. NICOLL, Sheriff.
August W. Rosinger, Sol'r. (\$21.00)

(Chancery A-345.)
SHERIFF'S SALE—In Chancery of New Jersey. Between T. Fernald Campbell, complainant, and Bertha G. Wilder et al., defendants. Pl. fa. for sale of mortgaged premises.

By virtue of the above stated writ of fieri facias, to me directed, I shall expose for sale by public vendue, at the Court House in Newark, on Tuesday, the seventeenth day of May next, at two o'clock P. M., all that tract or parcel of land and premises situate, lying and being in the town of Bloomfield, Essex County, New Jersey:

Beginning at a point in the northerly side line of Watessing avenue thence distant north eighty-five degrees seventeen minutes fifty seconds east one hundred feet from the point of intersection of the same with the easterly side line of Grace street, from thence running (1) north eighteen degrees five minutes fifty seconds east one hundred and forty-five one-hundredths of a foot to the line of lands of William and Sarah Hall; thence (2) along their lands north eighty-one degrees one minute and thirty seconds east eighty-one feet and fifteen one-hundredths of the estate of George Bradley, deceased; thence (3) along the same in a southerly direction one hundred and twenty-five feet to said northerly side line of Watessing avenue; and thence (4) along said avenue south eighty-five degrees seventeen minutes fifty seconds west eighty-six feet each eleven one-hundredths of a foot to the point of place of beginning.

Newark, N. J., April 11, 1904.
WILLIAM C. NICOLL, Sheriff.
Fitch & Fitch, Sol'rs. (\$11.00)

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